Intergenerational proximity, residential relocations and the well-being of older people

van der Pers, Marieke

Chapter 2

The Regional Dimension of Intergenerational Proximity in the Netherlands

This chapter is published as:

Van der Pers, M. and Mulder, C.H. 2013. The Regional Dimension of Intergenerational Proximity in the Netherlands. *Population Space and Place,* **19**, 5, 505-521.

Abstract

Previous research has shown the impact of individual characteristics on intergenerational proximity but has largely ignored the regional dimension of such proximity. In this paper, we examine the regional variation in intergenerational proximity in the Netherlands. We address this issue by incorporating indicators of urbanisation and regional culture in an analysis of the likelihood that adult children live within daily reach (within a distance of 5 or 20 km) of their older parents. We also depict the spatial variation in intergenerational proximity in maps. Employing logistic regression on nearly 5 million parent–child dyads extracted from register data, we find that the degree of urbanisation of the residential municipality of the two generations shows contrasting effects: a positive association for the degree of urbanisation of the parents' municipality, a negative association for the children's. Older parents living in areas in which more conservative and collectivist attitudes prevail are more likely to have their adult children living close to them. After accounting for the municipality dummies, the explanatory power of the model improves considerably. However, substantial spatial variation in intergenerational proximity remains largely unexplained after controlling for the regional characteristics.

Keywords: *intergenerational proximity, regional differences, older parents, register data, the Netherlands.*

2.1 Introduction

Research indicates that adult children, and daughters in particular, are more likely than any other group of potential caregivers to provide personal and practical support to elderly persons (Spitze and Logan 1990, Komter and Vollebergh 2002, Mulder and Van der Meer 2009). Relatives are also the first alternative when parental care is not available, and grandparents are the most important resource for childcare besides formal childcare institutions (Hank and Buber 2009, Kaptijn et al. 2010).

Because cutbacks in state support will affect the future provision of institutional care, support within families may become even more important than it has been thus far (Mulder and Van der Meer 2009). At the same time, structural processes such as increased longevity and improved health conditions allow the lives of generations to overlap for a longer period of time whereas decreased fertility leads to fewer (grand)children per (grand)parent. These processes can lead to more intense relationships between (grand)parents and (grand)children which can facilitate informal support exchange (Geurts et al. 2009).

Interaction and support exchange across generations are very sensitive to geographic distance, where distance serves as the strongest predictor of support exchange among family members (Lawton et al. 1994, van Tilburg, Broese van Groenou et al. 1995, Greenwell 1997, Rogerson et al. 1997, Hank 2007, Bordone 2009, Hank and Buber 2009,

Mulder and Van der Meer 2009). Although geographic distances are not considerable in the Netherlands, travel distance restrains relationship maintenance significantly (Bloem et al. 2008). A distance of over five rather than under five kilometres makes a great difference in support exchange (Knijn and Liefbroer 2006).

Because of the strong negative relation between geographic proximity and support exchange, it is relevant to understand the determinants that account for differences in intergenerational proximity. While previous research has shown that individual characteristics of parents and children contribute to intergenerational proximity to a large extent (Rogerson et al. 1997, Mulder and Kalmijn 2006, Malmberg and Pettersson 2007, Michielin and Mulder 2007), regional characteristics have received little attention. To our knowledge, the only regional factor that has thus far been included in analyses of proximity or distance is the degree of urbanisation (Mulder and Kalmijn 2006, Michielin and Mulder 2007). This is unfortunate because there could well be regional disparities in intergenerational proximity, for example owing to regional differences in opportunity structures or in cultural norms.

The aim of this article is therefore to provide new insight into the extent to which regional characteristics contribute to explaining differences in intergenerational proximity. Using detailed register data for the Netherlands, we first explore the spatial pattern of intergenerational distances. Next, we investigate the impact of several regional characteristics on intergenerational proximity (parents and children living within five or twenty kilometres from each other). We depict the spatial variation in intergenerational proximity in maps at the municipality level.

2.2 Theoretical framework

The geographical distribution of family members is the outcome of relocation decisions and residential choices of individuals. Past residential mobility of both parents and their children shapes the geographic distance between elderly parents and their adult children at a certain moment in time (Mulder and Kalmijn 2006, Mulder and Cooke 2009). Residential mobility itself is associated with different needs and resources during the different phases of the life course; life course events trigger or restrict moves between residential locations. Included among these needs and resources are family ties. Feelings of solidarity reinforce the preference for living in close proximity to family members (Lawton et al. 1994, Hank 2007).

Given the above, we approach intergenerational proximity as an outcome of two main human needs. The first is the need for a proper residential location that facilitates access to an adequate level of knowledge and income, appropriate housing, and the formation of a partnership and/or family. This need relates to the education, work, housing and household careers. The relative importance attached to these life course careers leads to preferences for a certain type of residential environment, thereby affecting intergenerational proximity. The second human need is the need for closeness and contact with close family members outside the household, combined with feelings

of responsibility for providing support to these family members. This need is related to the family career and may directly impact on the residential location of family members and affect people's residential choices and consequently intergenerational proximity. The argumentation about the two human needs leads to several expectations, some of which contradict each other. The main hypotheses we want to test, however, pertain to regional variation in proximity and are formulated after the theoretical discussion about the two needs.

Needs related to the education, work, housing and household careers

The existing literature on migration and intergenerational proximity shows that there are strong associations between the education, work, housing and household careers and place of residence (Börsch-Supan 1990, Fischer and Malmberg 2001, Feijten et al. 2008, Mulder and Cooke 2009). The more frequently people migrate, the further they tend to move away from their original place of residence (Rogerson et al. 1993). Migration has a particular pattern by age, with mobility peaks in the twenties and low mobility rates at older ages. Women move more often towards the place of residence of their male partner rather than the other way around (Mulder and Wagner 1993). Women are also more often tied movers and have a higher mobility at old age (Cooke 2003, Cooke 2008). Being in a relationship is a major constraint on migration because the costs of moving as a couple are greater than as a single-person household for the reason that two persons are tied to one place (Fischer and Malmberg 2001). Having children also increases ties to the location, especially from the moment children enter primary education (Fischer and Malmberg 2001). Furthermore, various studies have shown that higher levels of education lead to more mobility (Börsch-Supan 1990).

From this existing knowledge on the associations between life-course careers and migration intergenerational proximity can be expected to be associated more strongly with situations and events in the life courses of the younger generation than those of their parents because of the much greater likelihood of moving of younger people. We would expect that intergenerational proximity is less likely with increasing age and when particularly the adult child is unmarried, widowed, divorced or separated, and is more likely when the adult child has children. The dominance of men in the location decisions of couples would lead us to expect couples to live closer to the man's parents than to the woman's parents (compare Blaauboer, Mulder and Zorlu, 2011). One would also expect highly educated family members to live farther away from each other (Rogerson et al. 1993, Silverstein 1995, Kalmijn 2006, Mulder and Kalmijn 2006), but unfortunately our data do not allow us to test such a hypothesis.

Needs related to the family career

People benefit from geographic proximity in various ways. Proximity facilitates face-to-face interaction, the exchange of instrumental support, facilitates emotional intimacy and increases the opportunities for sharing experiences (Lawton et al. 1994). We

therefore expect intergenerational proximity to be related to resources and needs within the family career as well.

Those who do not have a partner might feel a greater need for closeness to family than those with a partner, because a partner tends to fulfil much of the need for both company and support (Dykstra and De Jong Gierveld 2004). In general, women tend to have stronger feelings of family solidarity than men (Rossi and Rossi 1990) and according to Spitze and Logan (1990), the expression of responsibility towards family members is gender-specific. Men are more likely to provide financial support, whereas women devote more time and effort to emotional and practical support, both to the older generation (for example, in providing personal care) and to the younger (for example, in caring for grandchildren). The expression of responsibility is also gender-specific with regard to receiving support. For example, women receive more support from their children after divorce or widowhood than men do (Spitze and Logan 1990). After having grown up, children tend to move closer to their mother than to their father, especially in situations of divorce or widowhood (Smits 2010). And, grandmothers from the mother's side are more likely to take care of their grandchildren than those from the father's side (Euler and Weitzel 1996).

From the insights on needs related to the family career, we would expect those without a partner (i.e. unmarried, divorced or widowed) to be more likely to live close to a parent or child. This expectation is contrary to the expectation derived from the greater mobility of those without partners. Since divorce leads to diminished contact with family members (De Jong Gierveld and Dykstra 2002), we expect the position of those who are divorced to be different from the unmarried and widowed. Furthermore we would expect mothers and daughters to be more likely to live close to their adult children or parents than fathers and sons. This expectation is contrary to what we would expect from the perspective of male dominance in migration decisions, and to findings by Blaauboer, Mulder and Zorlu (2011).

Finally, we expect older parents to live closer to their adult children when the latter have young children.

Regional variation

We address the regional variability in intergenerational proximity by considering the role of the regional context in the provision of opportunities for fulfilling needs in the education, work, housing and household careers, and in providing a cultural background that determines whether family solidarity and physical proximity to family are regarded as less or more important.

Location is an important factor in individual education, work and housing careers. Areas that are more urbanised provide a broader set of opportunities for education and employment, offer more cultural and leisure facilities, and have a more varied and affordable range of housing than rural areas (Greenwell and Bengtson 1997, Feijten et al. 2008). This motivates many young people to move towards the more urban areas,

and particularly those in search of higher education are inclined to move to university towns. After being 'pulled' to the more urban areas, during the phase of family formation especially middle-class households are likely to move to suburban or rural areas which offer better opportunities for family living (Feijten et al. 2008).

Children who grow up in urban areas, particularly in university towns, have many educational and job opportunities nearby and have therefore less need to move far away from their parents as compared to those living in less urbanised areas. We hypothesise that *older parents who live in urban areas and university towns are more likely to live close to their adult children than their counterparts living in more rural areas (Hypothesis 1).* At the same time, adult children who reside in urban areas and university towns are likely to have moved there in the past. We therefore expect that *adult children living in urban areas and university towns are less likely to live close to their parents than adult children living in more rural areas (Hypothesis 2).* Support for this hypothesis was found in earlier research by Mulder and Kalmijn (2006).

Regional cultural characteristics could play a role in the need for contact and closeness. Where Western Europe is concerned, it has been argued that there are differences between countries in the South with strong family systems and countries in the North with weaker family systems (Reher 1998). These differences have a long history and have become part of regional cultures. Even though the Netherlands is a small country and cultural differences between regions are not as pronounced as differences between sets of countries, we still believe that norms, values, attitudes and practices concerning family matters differ with regional cultural characteristics. In their turn, these regionally specific norms, values, attitudes and practices may have an impact on intergenerational proximity. For example, in regions where more conservative and/or collectivist attitudes prevail, people may have stronger needs and feelings of responsibility for face-to-face contact and support exchange with family members and may therefore be more hesitant to move far away from them.

According to Brons (2006), areas in the Netherlands in which conservative attitudes prevail are also areas in which uncertainty avoidance and masculinity occur more frequently and they correspond with areas in which Protestantism and Catholicism are more prevalent. At the same time, areas in which more collectivist attitudes prevail are more often areas with less materialistic and less egoistic values (Brons 2006). We approach the contribution of cultural norms and values to intergenerational proximity from a regional perspective, and assume that in areas in which more conservative and/or collective attitudes prevail, norms and values are rooted more strongly in religion among a larger share of the population. Because religiosity can be used as an indicator for individual value systems, religious ideologies determine one's norms and values about family issues to some extent. Various studies have shown that people who consider themselves as being religious have more contact with family members and have stronger feelings of family obligation (Kalmijn and Dykstra 2006, Killian and Ganong 2002, Liefbroer and Mulder 2006). From this perspective, we argue that strong family norms

and obligations make family members less likely to move away from each other. We therefore hypothesise that *intergenerational proximity is more likely when the parents live in an area in which more conservative and/or collectivist attitudes prevail (Hypothesis 3).*

Furthermore, studies have shown that, after controlling for a variety of background characteristics, people in less urbanised areas tend to have stronger family ties (Rogerson et al. 1993, Hogerbrugge and Dykstra 2009). We would therefore expect that *intergenerational proximity is more likely among parents living in rural areas than among those living in urban areas (Hypothesis 1a).* This contradicts our Hypothesis 1 based on a greater need among children from rural families to move towards areas with more educational, job and housing opportunities, and is tested as an alternative to that hypothesis.

Apart from urbanisation and regional culture, other factors may also influence the patterns of intergenerational distances. For example, peripheral areas or areas facing population decline might be less attractive for the younger generation to remain in or return to. Besides testing our hypotheses on regional variation, we therefore depict the remaining regional variation at the municipality level in maps.

2.3 Data and methods

The data set

Life events of all inhabitants of the Netherlands are recorded in municipal population registers. The data for this study were derived from these municipal population registers, in Dutch 'Gemeentelijke BasisAdministratie' (GBA). The GBA contains data on individual residential locations and other demographic characteristics of all people registered as inhabitants of the Netherlands from 1 January 1995 onwards (Statistics Netherlands 2010c). We had access to a dataset that covered all officially registered residential locations, and changes in these, from the beginning of 1995 until the end of 2009.

GBA is accessible to researchers through the Social Statistical Database (SSB), housed by the Statistics Netherlands, via on-site analysis or remote access. Record linkage between parents and adult children allows for the investigation of proximity over time. A great advantage of the GBA is that it constitutes population data rather than a sample, which enables us to study the entire population of the Netherlands and consequently to create a detailed spatial overview of intergenerational proximity at the municipality level (443 areal units with an average number of 11,207 parent-child dyads). However, population data also have their limitations, especially when working off-site. Besides the fact that working with very large datasets requires a great amount of time, the available software had a limited capacity and data storage was restricted for financial reasons. Because of these restrictions the study population had to be limited in size.

Study population

All individuals from birth cohorts born before 1954 were selected as potential parents to whom children were matched. Because only addresses of persons registered in the Netherlands were available, dyads in which the parent or the child lived abroad for the whole period 1995-2009 could not be captured. In order to exclude ages at which a majority of the children are still dependent on their parents, we have excluded the parent-child dyads in which the child was younger than 25 years. Due to the above-mentioned restrictions arising from working off-site with a very large dataset, we chose to work with five selected parental ages: 55, 65, 75, 85 and 95 years. We used the information pertaining to the day the person reached one of these ages (the 55th birthday, the 65th, etcetera). This selection enabled us to identify changes over age and time. In instances in which a parent appeared in the data at more than one age, the case in which the parent was oldest was selected. However, parents and children can appear multiple times due to the inclusion of all identified parent-child dyads. For example, a parent with three identified children appears three times; a child with two identified parents appears twice, and so on. This selection procedure resulted in nearly 5 million parent-child dyads pertaining to 2.6 and 3.2 million unique parents and children (Table 2.1). Because women live longer than men, the data contained fewer dyads with older men than women.

Table 2.1 Available parent-child dyads in GBA, at parental ages 55, 65, 75, 85 and 95, by number of children and marital status, for the period 1995-2009.

	Age 55	Age 65	Age 75	Age 85	Age 95	Total dyads
Male	160,273	581,158	760,943	486,326	133,811	2,122,511
Female	296,601	705,215	915,570	679,446	245,568	2,842,400
Total dyads	456,874	1,286,373	1,676,513	1,165,772	379,379	4,964,911

	Total parents	Total Children
Male	1,218,106	1,123,770
Female	1,521,679	2,012,071
Total children	3,230,177	
Total parents		2,645,449

Source: Statistics Netherlands (2010a, 2010b).

The measurement of intergenerational proximity and the independent variables

Because the physical characteristics of the Dutch landscape and its dense infrastructure do not constitute serious barriers in geographic distance between inhabitants, we approach intergenerational proximity with Euclidean distances. This type of distance is measured as the length of a straight line between the geographic coordinates of the geographical midpoints of the neighbourhoods of residence of the parent and the child. Although geographic distances in the Netherlands are not very great, travel distance restrains relationship maintenance significantly (Bloem et al. 2008). We measured

living within easy daily reach as *living within five kilometres*. *Living within twenty kilometres* was used to indicate a feasible distance for regular support exchange. In this measurement we follow Knijn and Liefbroer (2006) who studied the association between distance and support exchange in the Netherlands and found that a distance of over five, rather than under five kilometres makes a great difference for support exchange, whereas distances over 20 kilometres are associated with even less support.

Co-residence is arguably different from living very close (Pillemer and Suitor 1991, Smits 2010). We therefore excluded dyads in which the parent and child co-resided from most of our models, but we also performed one analysis including co-residence. We were not able to measure co-residence directly at every exact moment in time, but we could approach it in a satisfactory way by using available information about the child's household position in combination with zero distance between the parent and the child.

As indicators of the parents' household careers and their need for closeness to their children, we included *age,* an *interaction of sex and marital status* and *number of children*. Where the adult children were concerned, we included *sex, age, marital status, whether the child has a sister, whether or not he or she has a child* and *whether this child is below the age of 12 years*; the age of 12 represents the age at which the majority of children make the transition from primary to secondary school in the Netherlands. Those in a registered partnership (an official alternative to marriage introduced in the Netherlands in 2000) were labelled as married (N=2,896 parents and N=32,803 children); the category unmarried represents the never married. Although the correlation between the ages of the parents and their children is rather high (0.71), they are not collinear. By including both ages, we are able to account for age differences between parents and children.

Regional variation was introduced into the analyses in three ways. For place of residence of the parent, *dummy variables for each individual municipality* (N=442) were used. This allowed us to draw detailed maps of the spatial variation in intergenerational proximity. *Degree of urbanisation* was based on address density at neighbourhood level (urban: 1,500 or more addresses per km², suburban: 500 to 1,500 addresses per km², rural: fewer than 500 addresses per km²) and a separate category for university towns was created. Towns with other higher educational institutions than universities were not labelled separately. *Regional culture* was operationalised using two dimensions of culture. On the basis of 65 variables at municipality level, Brons (2006) constructed seven indices of regional culture. Of these seven, we used the dimensions *Protestant conservatism* and *individualism*. These dimensions approximate the regional characteristics of attitudes, beliefs, values and practices we are interested in with regard to the need for closeness and contact with close family members outside the household as well as feelings of responsibility in caring for these family members**.** These indices are available for the 487 municipalities that existed in the period 1997-2003. Since 2003 the number of municipalities has decreased by 44 as a result of mergers. To account for this change in the number of municipalities we calculated the average scores on Protestant

conservatism and individualism for the new municipalities. We measured the dimensions of regional culture for the municipality of the parent rather than that of the child, for two reasons. First, socialization into a certain regional culture is assumed to take place mainly during childhood and adolescence. Second, it is more likely that adult children who live far away from their parents have moved away after growing up in their parents' place of residence rather than the other way around. Note that we did not have information about where the child actually grew up.

Analytical strategy

We used descriptive methods to explore the pattern of mean distances between older parents and their adult children for 40 NUTS-3 level regions, in the Netherlands denoted as COROP regions. NUTS (Nomenclature of Units for Territorial Statistics) regions are a geocode standard for referencing the subdivisions of countries for statistical purposes, developed and regulated by the European Union.

Next, we employed logistic regression of the likelihood of parents to live within five or twenty kilometres from their adult child. Because our data were not derived from a sample but a complete population, the meaning of statistical significance is not straightforward. However, we do report whether the associations observed are statistically significant because we believe our data can be regarded as a one-moment sample from a theoretical population of many time points (see also Michielin et al. 2008). For the variables measured at the level of dyads, significance levels of $p < .01$ are easily reached except for dummy variables indicating a small population subgroup. For variables measured at the municipality level, however, not even $p < .10$ is reached in many cases, because there are only a few hundreds of municipalities.

We applied a correction of the standard errors using the Huber-White sandwich estimator (Huber 1967) to deal with the fact that the variables measuring regional characteristics were measured at the municipality level (443 observations) rather than at the individual level. This simple correction was employed rather than more complex multilevel models because our main interest was in the size and significance of effects rather than the relative importance of regional versus individual characteristics. Moreover, the dataset was too large to allow multilevel models. We made no further corrections to the standard errors for the individual characteristics with regards to the clustering of persons in families. We did not think this was necessary, because the standard errors of the parameters for the parents' and children's individual characteristics appeared to be so small that almost all parameters were statistically significant at the 0.01 level. Further correction could possibly cause significance levels to exceed 0.01 for some parameters, but not 0.05.

In a third analytical step, we ran logistic regression models using 442 dummy variables for the 443 municipalities in the Netherlands in which parents lived. We used the parameters for these municipality dummies to map the spatial variation in intergenerational proximity. To create these maps we ran two models: one which

included the demographic characteristics of parents and children in order to take population composition into account, and a second one that also included the degree of urbanisation and the two indicators of regional culture in order to see whether the spatial variation could be explained from these regional characteristics.

2.4 Results

Descriptive findings: distances between older parents and their adult children

We find that in three-quarters of the parent-child dyads the parent lived within twenty kilometres distance from his or her child (Table 2.2). This is in line with Dykstra and Knipscheer (1995) whose findings indicate that 86 percent of the persons living in the Netherlands who are aged 55 to 89 years have at least one child living within a travelling distance of 30 minutes. Our results also show that in over half of the parent-child dyads parents live within a distance of five kilometres from their child, a distance that enables contact and support exchange on a daily basis. Furthermore, in three percent of the parent-child dyads in which the parent is 65 years or older co-residence with the adult child occurs.

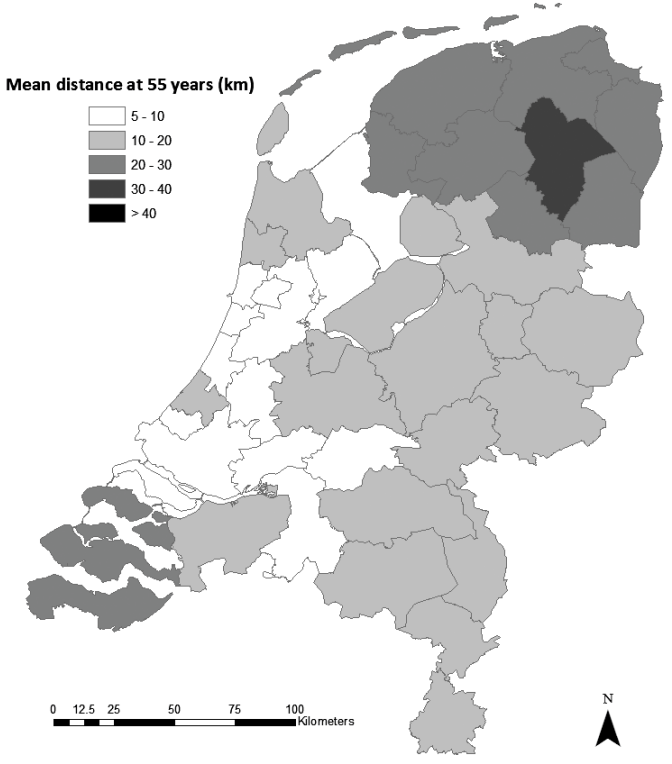
Table 2.2 Cumulative distribution of selected distances, by age of the parent in percentages. N=4,964,911 parent-child dyads.

	Age 55	Age 65	Age 75	Age 85	Age 95	Total age 55+	Total age 65+
Coresidence	18.0	7.8	3.9	1.2	0.1	6.1	3.3
< 100 m	44.3	26.1	20.8	14.5	12.4	24.6	20.5
< 1 km	49.2	32.6	26.9	20.4	17.8	30.6	23.6
< 5 km	69.4	60.0	53.3	45.8	42.8	55.9	54.4
< 20 km	81.4	77.1	71.4	64.7	61.6	72.6	73.0
< 40 km	89.2	87.9	83.9	78.6	75.1	83.9	84.0
< 60 km	91.6	91.0	87.7	83.0	79.8	87.4	89.4
< 100 km	96.0	97.2	95.2	91.9	89.5	94.1	97.0

Source: Statistics Netherlands (2010a, 2010b).

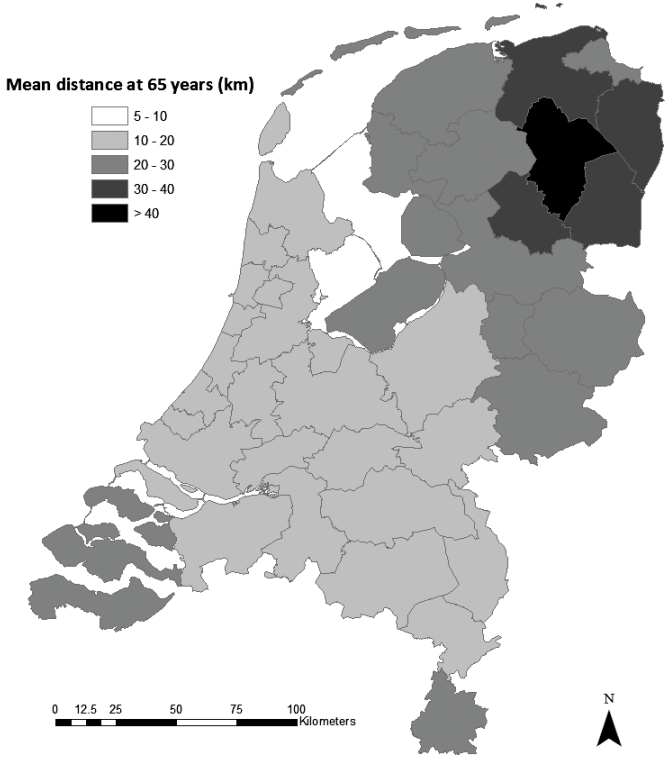
When we explore the spatial pattern in more detail at NUTS-3 level we see that for all areas mean distances are greater with increasing age of the parent, although the rate of increase is not the same for each area (Figures 2.1-2.4). Further away from the economic core of the Netherlands, the *Randstad area* (Figure 2.5), the distances between the generations are larger.

Figure 2.1 Mean distance (in kilometres) between parents aged 55 years and children, by NUTS-3 level area of the parent.



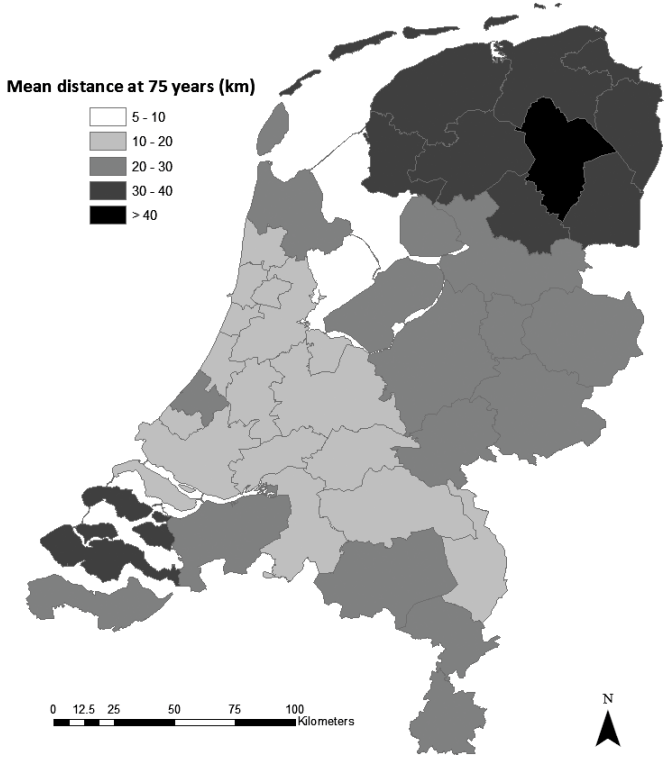
Source: Statistics Netherlands (2010a, 2010b).

Figure 2.2 Mean distance (in kilometres) between parents aged 65 years and children, by NUTS-3 level area of the parent.



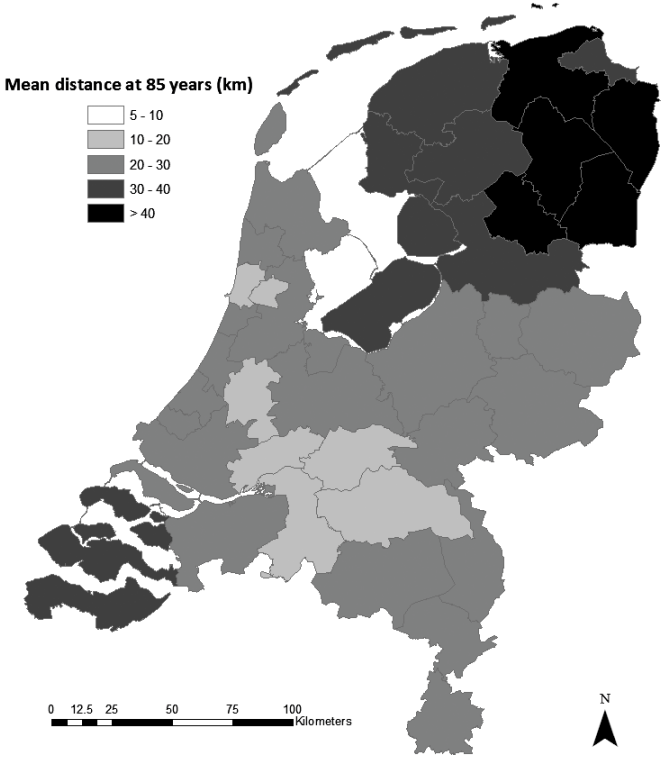
Source: Statistics Netherlands (2010a, 2010b)

Figure 2.3 Mean distance (in kilometres) between parents aged 75 years and children, by NUTS-3 level area of the parent.



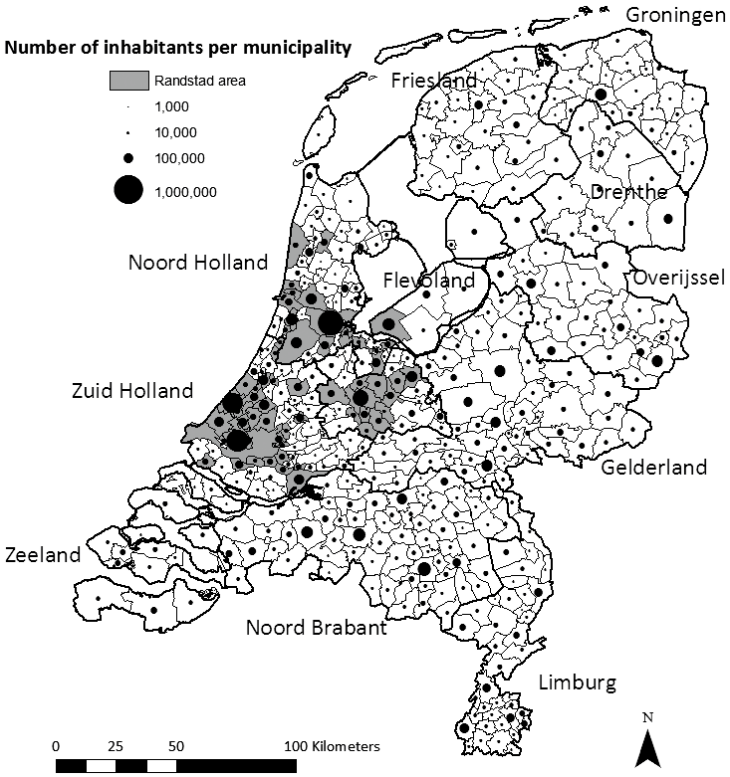
Source: Statistics Netherlands (2010a, 2010b).

Figure 2.4 Mean distance (in kilometres) between parents aged 85 years and children, by NUTS-3 level area of the parent .



Source: Statistics Netherlands (2010a, 2010b).

Figure 2.5 The Netherlands: municipalities and the Randstad area.



Interestingly, at an older age of parents, in four relatively rural areas in the south distances are among the shortest, whereas older parents living in the northern regions and Zeeland (southwest) live furthest away from their children.

Distance between older parents and their adult children is greater with increasing age of the parent (Table 2.3). The age pattern of mean distances differs by sex and marital status. At age 55, mothers live on average slightly closer to their children than fathers, but this gender difference reverses from age 65 onwards. Unmarried parents live closer to their children than married, widowed or divorced parents. The less urban the parent's municipality of residence, the further away parents and children live from each other.

Concerning the two dimensions of regional culture, the descriptive statistics show that when more conservative (Protestant or Catholic) attitudes in the parents' place of residence prevail, older parents tend to live closer to their adult children. 'Individualism' does not show the expected pattern: older parents living in areas with more individualistic attitudes live closer to their adult children than parents living in areas with more collective attitudes.

Table 2.3 Descriptive statistics categorical variables - parental characteristics. N=4,964,911 parent-child dyads.

			Mean distance (km) between parent and child when parent is at				
	N	%	Age 55	Age 65	Age 75	Age 85	Age 95
Total	4,964,911	100	13.4	18.6	22.4	25.6	28.2
Sex							
Male	2,122,511	42.8	13.5	18.9	23.1	26.9	29.3
Female	2,842,400	57.2	13.7	18.3	21.9	25.0	27.8
Marital status							
Unmarried	8,181	0.2	9.0	11.5	14.0	15.6	15.8
Married	3,180,469	64.1	12.8	18.5	22.9	27.4	32.1
Widowed	1,464,892	29.5	13.6	17.2	21.0	24.5	27.6
Divorced/Separated	311,369	6.3	19.5	23.0	26.9	29.9	31.1
Number of children							
One child	298,495	6.0	11.7	16.4	19.7	21.0	21.6
Two children	2,092,713	42.2	13.4	18.5	22.7	26.1	28.6
Three children	982,893	19.8	14.5	19.6	23.5	27.2	30.4
Four or more children	1,590,810	32.0	14.2	18.4	21.9	24.4	28.4
Degree of urbanisation							
University	767,553	15.5	12.1	16.8	21.5	25.0	27.2
Urban	1,342,472	27.0	11.6	17.0	21.7	25.6	27.7
Suburban	975,930	19.7	13.7	19.1	23.2	26.4	28.7
Rural	1,878,956	37.8	15.4	20.1	22.8	25.6	28.7
Period							
1995 – 1999	566,821	11.4	11.4	17.5	21.8	25.5	27.9
2000 – 2004	1,820,666	36.7	14.7	19.4	23.0	25.8	28.0
2005 – 2009	2,577,424	51.9	25.2	26.3	26.8	27.1	27.6
Protestant conservatism							
Very low: Catholic	650,359	13.1	12.6	16.2	18.3	19.9	22.2
Low	1,006,509	20.3	13.9	18.6	21.8	24.4	26.4
Medium	1,105,814	22.3	15.0	20.6	24.8	28.6	31.2
High	1,262,947	25.4	14.2	19.8	24.3	28.1	30.9
Very high: Protestant	939,282	18.9	11.7	16.5	20.5	23.4	25.5
Individualism							
Very low: collectivistic	116,774	23.4	14.7	19.4	23.4	26.4	29.9
Low	974,256	19.6	14.3	19.3	22.9	26.1	27.7
Medium	792,011	16.0	15.4	20.5	23.5	27.0	29.4
High	987,018	19.9	11.9	16.4	20.1	22.9	25.0
Very high: individualistic	1,049,852	21.1	12.4	17.7	22.1	26.0	28.9

Source: Statistics Netherlands (2010a, 2010b).

Table 2.4 Descriptive statistics categorical variables - characteristics of the child. N=4,964,911 parent-child dyads.

			Mean distance (km) between parent and child when parent is at				
	N	%	Age 55	Age 65	Age 75	Age 85	Age 95
Total	4,964,911	100	13.4	18.6	22.4	25.6	28.2
Sex and presence sister							
Son, without sister	798,217	16.1	11.2	17.4	21.6	24.5	26.8
Son, with sister	1,730,451	34.9	11.8	17.5	21.3	24.6	27.8
Daughter, without sister	1,113,767	22.4	15.4	19.2	22.7	25.7	26.8
Daughter, with sister	1,322,476	26.6	16.6	20.2	23.9	27.5	30.3
Age							
25 – 30 years	747,429	15.1	12.6	14.8	14.4	18.5	-
30 – 40 years	1,589,293	32.0	14.9	19.2	18.7	18.8	12.5
40 – 55 years	2,169,177	43.7	-	18.6	22.9	24.7	25.3
55 years and older	459,012	9.2	-	-	25.3	27.1	28.6
Marital status							
Unmarried	1,041,587	21.0	11.0	18.0	21.9	24.0	24.8
Married	3,341,461	73.3	15.2	18.6	22.1	25.5	28.2
Widowed	115,036	2.3	16.2	18.5	22.5	25.3	27.4
Divorced/Separated	466,827	9.4	16.4	20.1	25.1	29.2	32.5
Age of children							
Children < 12 years	3,851,933	77.6	15.5	18.8	22.5	25.6	28.3
Children >= 12 years	608,420	12.3	13.8	18.5	22.6	28.3	29.0
No children at all	504,558	10.2	14.6	18.2	22.0	25.1	28.4
Degree of urbanisation							
University	792,762	16.0	25.2	26.3	26.8	27.1	27.6
Urban	1,400,339	28.2	14.3	20.4	23.7	26.0	28.2
Suburban	980,912	19.8	10.3	17.1	22.3	26.8	30.4
Rural	1,790,898	36.1	8.3	14.6	19.8	24.2	27.1

Source: Statistics Netherlands (2010a, 2010b).

Table 2.5 Logistic regression models of intergenerational proximity, demographic and regional characteristics.

	5 km incl. co-residence		5 km excl. co-residence		20 km excl. co-residence	
	Coef.	Robust Std. Err.	Coef.	Robust Std. Err.	Coef.	Robust Std. Err.
Constant	0.881	0.096	0.675	0.098	1.215	0.101
Age parent	0		0		0	
55 years	0.964	0.022	0.607	0.184	0.713	0.020
65 years	0.259	0.009	0.256	0.009	0.329	0.008
75 years	0		0		0	
85 years	-0.230	0.008	-0.226	0.008	-0.268	0.008
95 years	-0.344	0.012	-0.330	0.012	-0.387	0.013
Sex and marital status parent						
Male - Unmarried	0.520	0.105	0.556	0.090	0.665	0.140
Female - Unmarried	0.494	0.054	0.500	0.048	0.588	0.082
Male - Married	0.082	0.003	0.039	0.003	0.040	0.003
Female - Married	0		0		0	
Male - Widowed	0.116	0.010	0.090	0.009	0.154	0.010
Female - Widowed	0.172	0.005	0.143	0.005	0.190	0.007
Male - Divorced/Separated	-0.418	0.015	-0.344	0.015	-0.278	0.013
Female - Divorced/Separated	-0.338	0.019	-0.268	0.018	-0.230	0.016
Number of children parent						
One child	0		0		0	
Two children	-0.199	0.008	-0.202	0.008	-0.209	0.008
Three children	-0.211	0.012	-0.228	0.012	-0.233	0.011
Four or more children	-0.139	0.020	-0.154	0.020	-0.114	0.015
Urbanisation parent						
With university	0.368 [c]	0.258	0.326 [c]	0.240	0.368 [c]	0.199
Urban	0.435	0.125	0.426	0.118	0.435	0.123
Suburban	0.240 [a]	0.099	0.240 [a]	0.093	0.240 [a]	0.092
Rural	0		0		0	
Period						
1995 – 1999	0.103	0.006	0.113	0.006	0.118	0.006
2000 – 2004	-0.017	0.005	-0.051	0.005	-0.037	0.005
2005 – 2009	0		0		0	
Sex child						
Son, without sister	0		0		0	
Son, with sister	0.030	0.005	0.036 [a]	0.005	0.020	0.005
Daughter, without sister	-0.199	0.017	-0.143	0.016	-0.095	0.009
Daughter, with sister	-0.260	0.016	-0.206	0.016	-0.149	0.009

(Continues)

Table 2.5 (Continued)

	5 km incl. co-residence		5 km excl. co-residence		20 km excl. co-residence	
	Coef.	Robust Std. Err.	Coef.	Robust Std. Err.	Coef.	Robust Std. Err.
Age child						
25 – 30 years	0		0		0	
30 – 40 years	-0.349	0.012	-0.254	0.014	-0.078	0.016
40 – 55 years	-0.457	0.021	-0.379	0.022	-0.212	0.023
55 years and older	-0.500	0.028	-0.436	0.028	-0.314	0.030
Marital status child						
Unmarried	0.343	0.029	0.057[b]	0.033	-0.109	0.033
Married	0		0		0	
Widowed	0.108	0.010	0.090	0.010	0.112	0.011
Divorced / Separated	-0.044	0.014	-0.054	0.014	-0.059	0.100
Age grandchildren						
Younger than 12 years	-0.157	0.011	-0.023[b]	0.013	0.017[c]	0.015
12 years and older	-0.234	0.010	-0.126	0.012	-0.155	0.016
No children at all	0		0		0	
Degree of urbanisation child						
With university	-0.569[c]	0.407	-0.453[c]	0.389	-1.018	0.353
Urban	-0.198[c]	0.198	-0.142[c]	0.191	-0.527	0.190
Suburban	-0.095[c]	0.163	-0.069[c]	0.159	-0.316[b]	0.137
Rural	0		0		0	
Protestantism municipality parent						
Very Low: Catholic	0.363	0.055	0.355	0.055	0.546	0.065
Low	0.211	0.059	0.206	0.058	0.210	0.061
Medium	0		0		0	
High	-0.031[c]	0.057	-0.032[c]	0.056	-0.050[c]	0.058
Very high: Protestant	0.161[a]	0.068	0.150[b]	0.067	0.215	0.070
Individualism municipality parent						
Very Low: collectivistic	0.184	0.059	0.186	0.057	0.166[b]	0.066
Low	0.057[c]	0.055	0.060[c]	0.054	0.058[c]	0.066
Medium	0		0		0	
High	0.065[c]	0.055	0.068[c]	0.054	0.220	0.063
Very high: individualistic	0.042[c]	0.063	0.042[c]	0.062	0.287	0.062
Model summaries						
N	4,964,911		4,656,454		4,656,454	
Wald chi	312670		16827		16473	
Pseudo R^2	0.0495		0.0259		0.0345	
Degrees of freedom	41		41		41	

Source: Statistics Netherlands (2010a, 2010b).

Notes: odds ratios are significant at $p < 0.01$, except: [a] $p < 0.05$, [b] $p < 0.10$, [c] $p \geq 0.10$

The mean distances between older parents and their adult children are also greater with increasing age of the child (Table 2.4). Just as in the case of parents, the age pattern of mean distances differs by the sex and marital status of the child. Sons live closer to their parents than daughters do, but this difference is smaller when the parents are older. Adult children show the same distance patterns by marital status as parents, although the differences between the categories of the adult children are smaller than they are for the older parents.

Furthermore, adult children with one or more siblings live further away from their parents than children without siblings. As we expected, adult children who reside in more rural areas live closer to their parents than adult children who live in more urban areas. Children living in a university town tend to live much further away from their parents, especially when the parents are below retirement age. And, having (young) children does not seem to induce adult children to live closer to their older parent.

Regression results

The results of the logistic regressions of living within five and twenty kilometres show that for most independent variables the direction of the association is the same for all three definitions of proximity (Table 2.5). There are some differences in effect sizes, however. In the models for five kilometres distance, the greatest differences in effects between the models including and excluding co-residence are found for the parent's age, the child's marital status and the presence and age of grandchildren. Co-residence appears to be particularly likely when the parents are young and/or the child is unmarried and unlikely when the child has children. This clearly reflects the common time ordering of leaving the parental home and family formation in western countries: most young people do not form partnerships or families until after leaving home. The other effects are remarkably similar between these two models, suggesting that many factors exert a similar influence on living at home and living very close to home.

The majority of the estimates in the model for twenty kilometres are similar to those for five kilometres; many are slightly greater. However, the regional effects are much stronger in the model for twenty than in the model for five kilometres. Although we are not able to explain this pattern, our speculation is that parents and children who live very close to each other might form a select category with specific motivations or particular needs for closeness that we do not measure and that might overrule regional effects.

In the discussion we focus on the model for five kilometres excluding co-residence, and comment on the model for twenty kilometres where the effects are different.

Living in close proximity, demographic effects

In line with our expectations derived from the needs related to the education, work, housing and household careers, the results show that the likelihood of living in close proximity diminishes with increasing age of both the parent and child. In particular,

parents aged 55 are considerably more likely to live close to a child as compared to older parents. The alternative expectation derived from the need for closeness is not supported.

In line with our expectations concerning the greater need for closeness for those without a partner, the results show that unmarried and widowed persons have a much greater likelihood of living close to their children than married, divorced and separated persons. Our alternative expectation derived from the greater mobility of those without partners is not supported. The estimations also show that the position of divorced persons is indeed different from unmarried and widowed persons; they are less likely to live close by which can be attributed to the lesser need for contact with family members.

In line with our expectations with regard to the gender differences in the expression of responsibility, we find that widowed and divorced/separated mothers are estimated to be more likely to live within five or twenty kilometres distance than widowed and divorced or separated fathers. Although usually married mothers and fathers live at the same address, we find that married fathers are somewhat more likely to live close to their children than married mothers. This difference might possibly be explained from the fact that remarried parents are included in this category, while remarrying fathers may be more dominant in migration decisions.

Furthermore, sons are more likely than daughters to live close to their parents, which is also in line with the idea of male dominance in migration decisions and conforms to that by Blaauboer Mulder and Zorlu (2011). Interestingly, a son with a sister is even more likely to live close to his parents than a son without a sister. For daughters a reverse effect of having a sister is shown. The presence of a sister seems to attract her brothers to live closer, but for daughters who have a sister this does not seem to be the case. Instead, daughters might tend to see a sister as an alternative source of support which mitigates the need to live close to the parents.

Parents with one child are more likely to have that child living close by than parents with two or more children. Surprisingly, those with young grandchildren are not estimated to be more likely to live close by as compared to those without grandchildren; the effect is near zero. Parents with older grandchildren are even less likely to live close by.

Living in close proximity, regional effects

We hypothesised that the effect of living in an urban area, and particularly a university town, on intergenerational proximity would be positive for the older generation (Hypothesis 1) but negative for the younger generation (Hypothesis 2). The estimates in Table 2.5 indeed show the expected opposite effects. This finding implies rejection of our alternative hypothesis 1a concerning the stronger family ties and more conservative and/or collective attitudes prevailing in more rural areas.

From the regional cultural perspective, we hypothesized intergenerational proximity to be more likely when parents live in an area in which more conservative and/or

collectivist attitudes prevail (Hypothesis 3). Our findings for the index of Protestantism support this hypothesis: parents living in municipalities in which more conservative attitudes prevail (scoring either low or very high on Protestantism) are estimated to be more likely to live close to their children than parents in the other municipalities (Table 2.5). For the dimension of individualism the hypothesis is not fully supported: parents living in municipalities in which more collective attitudes prevail are more likely to live within five kilometres from their children, whereas among the other categories there are no significant differences. Surprisingly, parents living in areas in which individualistic attitudes prevail are significantly more likely to live within twenty kilometres distance in comparison with parents living in areas in which more collectivist attitudes dominate.

The maps presented in Figures 2.6 and 2.7 depict the parameters of the municipality dummies and show the regional variation in the likelihood of living within a five-kilometre distance for two different logistic regression models. Before controlling for regional characteristics (Figure 2.6), the more peripheral three Northern provinces and the southwestern province of Zeeland show little intergenerational proximity whereas elderly parents living in the Randstad, Noord-Brabant and Limburg are estimated to be more likely to live close to their adult children. For the *Randstad area* (Figure 2.5) the pattern can be explained by the fact that it constitutes the economic centre of the Netherlands. For the other regions, other (unknown) characteristics apparently make parents and children live at a shorter or greater distance from each other.

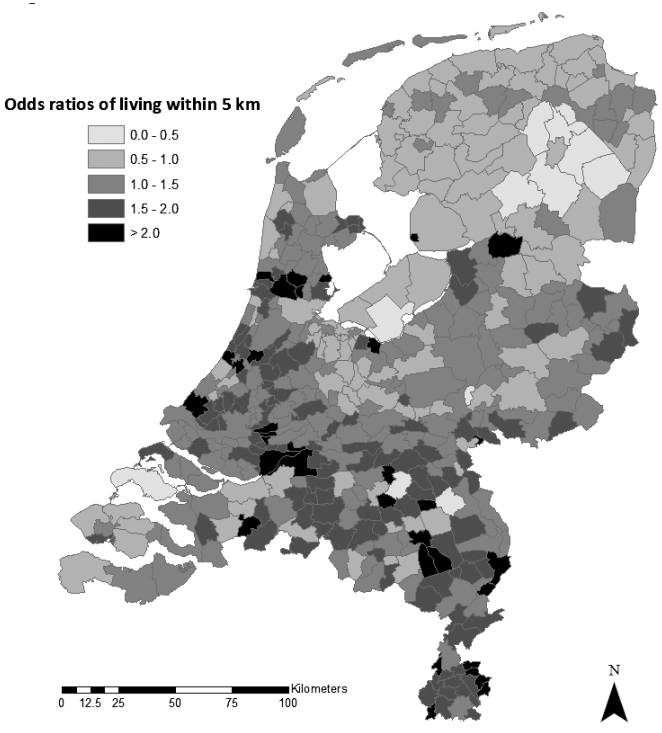
After controlling for the degree of urbanisation and the two indicators of regional culture, a different pattern of variation in intergenerational proximity among municipalities emerges (Figure 2.7). The core-periphery pattern becomes less evident. However regional variability remains. Some clusters of municipalities and some scattered municipalities, mainly in the south-eastern part of the country, show a greater or smaller likelihood of intergenerational proximity.

2.5 Conclusion and discussion

In this article we addressed the regional variation in intergenerational proximity in the Netherlands by considering the regional context in the provision of opportunities for fulfilling needs in people's education, and work, housing and household careers, as well as in providing a cultural background that determines whether family solidarity and physical closeness are regarded as less or more important. In our distinction between areas with different degrees of urbanisation we devoted special attention to university towns.

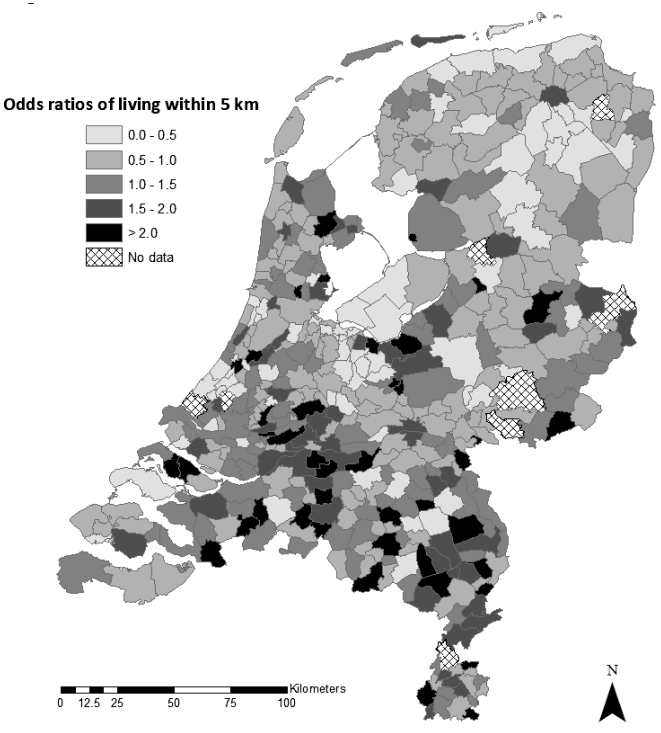
With detailed register data for the entire population of the Netherlands we were able to explore the spatial pattern of intergenerational distances. We found that about three-quarters of the older parents live within a distance of twenty kilometres from their

Figure 2.6 Logistic regression model of intergenerational proximity, odds ratios of living within 5 km by municipality parent. Controlled for demographic characteristics (Pseudo R^2 = 0.070).



Source: Statistics Netherlands (2010a, 2010b)

Figure 2.7 Logistic regression model of intergenerational proximity, odds ratios of living within 5 km by municipality parent. Controlled for demographic characteristics and regional characteristics of municipality of the parent (Pseudo R^2 = 0.076).



Source: Statistics Netherlands (2010a, 2010b)

children and about half live within five kilometres. The results of our logistic regression models partly confirm our expectations about the demographic determinants of intergenerational proximity. The likelihood of proximity decreases with age which reflects the cumulative effect of moves of particularly the younger generation. In line with our expectations derived from the associations between education, work, housing and household careers and migration, intergenerational proximity is less likely among the divorced or separated. Contrary to what we expected from the associations between life-course careers and migration, but in line with our hypothesis about the need for closeness among those without a partner, we find that the unmarried and widowed are more likely to live close to parents and children. In contrast with our expectation, however, being a grandparent was not found to make older parents more likely to live close to their children.

We found a substantial geographical variation in intergenerational proximity. We argued that intergenerational proximity is influenced by the regional context, which offers opportunities for fulfilling needs arising from the education, work, housing, household, and family careers. We found support for the hypothesis that the likelihood of living close differs according to the degree of urbanisation and whether the place of residence is a university town, but in a different direction for older parents and their adult children. Parents are more likely to live close to their adult children when they live in an urban area or university town, whereas adult children are more likely to live close to their parents when they live in more rural areas. Next, we argued that norms, values, attitudes and practices concerning family matters may differ with regional cultural characteristics, leading to the hypothesis that parents living in areas in which more conservative or collectivist attitudes prevail would be more likely to have their children living close by. Some support – albeit weak – was found for this hypothesis. Substantial spatial variation in intergenerational proximity remains largely unexplained after controlling for the regional characteristics we could measure.

Our data pertained to the entire population of the Netherlands out of which we could extract a study population comprising more than five million parent-child dyads with parents aged 55, 65, 75, 85 and 95. Accordingly, a great advantage of the data was the detailed way in which we could study regional variation. As a starting point for the analysis of regional variation, we could use separate dummy variables for all 443 municipalities in the Netherlands. The data did not offer much individual detail, however. A particularly unfortunate omission was the lack of information about the level of education. This is a serious limitation, because level of education is known to be an important determinant of intergenerational proximity (e.g. Silverstein 1995, Mulder and Kalmijn 2006). For the birth cohorts in this study, this limitation was inevitable. Data from education registers in the Netherlands are currently being made available for the younger cohorts, however. Besides education, another omission was the lack of information about health, obviously a better indicator of need for support than age.

In the light of the financial crisis in Europe and the increasing costs of formal care owing to population ageing, future government budget cuts might threaten the provision of formal care of the elderly, as well as the facilitation of formal childcare. Informal support exchange between the older and the working generations is therefore likely to play an even greater role in care provision than it does today. More insight into the spatial distribution of intergenerational proximity can make a useful contribution to adequate planning and implementation of social and health policies in order to deal with the consequences of population change.

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